AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-15. Cancelled.

16. (New) A method for examining a sample surface using an atomic force scanning microscope comprising a cantilever with a longitudinal extension along which a measuring tip is disposed, which is located relative to said sample surface by a means for driving and having a spatial position detected with a sensor, and at least one ultrasound generator, which initiates vibration excitation at an excitation frequency between said sample surface and said cantilever, the measuring tip being brought into contact with said sample surface so that said measuring tip is excited to vibrations oriented lateral to said sample surface and perpendicular to said longitudinal extension of said cantilever, torsional vibrations being induced in said cantilever which are detected and analyzed by an evaluation unit, said vibration excitation causing oscillations of said measuring tip including harmonic vibrations relative to the excitation frequency and said vibration excitation includes excitation amplitudes which cause torsional amplitudes within the cantilever with maximum values thereof forming a plateau of resonance spectra despite increasing excitation amplitudes and the resonance spectra which undergoes, in a range of said maximum values of said torsional amplitudes, a widening which is determinable by a plateau width, comprising:

using at least one of the plateau of said resonance spectra, a width of the plateau of said resonance spectra and/or a gradient of said resonance spectra for examining said sample surface.

17. (New) The method according to claim 16, wherein:

sequential scanning at a multiplicity of different points of contact between said measuring tip and said sample surface successive resonance spectra are detected and analyzed.

18. (New) The method according to claim 16, wherein:

tribological properties are analyzed and qualitatively and/or quantitatively determined.

19. (New) The method according to claim 18, wherein:

the tribological properties comprise a frictional force and/or frictional coefficients at said sample surface.

20. (New) The method according to one of the claim 16, wherein:

said measuring tip makes contact on said sample surface with a vertical load which is constantly adjusted by said means for driving.

21. (New) The method according to claim 16, wherein:

said ultrasound generator emits a continuous wave signal vibrating at said excitation frequency with said continuous wave signal being varied by means of frequency wobbulation within a given excitation frequency range.

22. (New) The method according to claim 21, wherein:

said excitation frequency range is selected such that the resonant vibration of said cantilever in contact with said sample surface via said measuring tip is contained within said frequency range.

23. (New) The method according to claim 22, wherein:

said sample surface is impinged with a frequency sweep for determining the resonant vibration of said cantilever lying on said sample surface with said measuring tip.

24. (New) The method according to claim 23, wherein:

said frequency sweep comprises the following range of frequencies f:

$f<f_r$ and $f<30f_r$.

where fr is a resonant frequency.

25. (New) The method according to claim 21, wherein:

said excitation frequency range comprises frequencies ranging from $f_r - ½f_r$ to $f_r+½f_r$, corresponding to a half-width value of a resonance curve at f_r.

26. (New) The method according to claim 25, wherein:

said frequency range comprises $f_r - \frac{1}{2}\Delta f_r$ to $f_r + \frac{1}{2}\Delta f_r$, with Δf_r corresponding to a half-width value of the resonance curve at f_r.

27. (New) The method according to claim 21, wherein:

said torsional vibrations of said cantilever lying on said sample surface with said measuring tip are detected using said sensor unit at a frequency range $n \ \Delta f_a$, with $n<25$, wherein Δf_a is the excitation frequency range.

28. (New) The method according to claim 27 wherein $2<n<10$.

29. (New) The method according to claim 17, wherein:

information obtainable from said resonance curve at each point of contact between said measuring tip and said sample surface comprises at least one of a half-width value Δf_r of said resonance curve at f_r wherein f_r is the excitation frequency, a plateau width, a plateau value, a gradient at said plateau or a vibration amplitude of harmonics are recorded and represented as encoded color values.

30. (New) The method according to claim 16, wherein:

said vibration excitation of said sample surface is caused by said ultrasound generator so that said ultrasound generator is directly or indirectly acoustically connected with said sample surface.

31. (New) The method according to claim 16, wherein:

a microscopic image of said sample surface is obtained by means of sequentially scanning said sample surface which said microscopic image containing information relating to a surface topography and tribological properties.

32. (New) The method according to claim 16, wherein:

said torsional vibrations inside said cantilever are detected by said sensor unit and sensor signals obtained by said sensor unit are examined with a wideband amplifier followed by spectral analysis.

33. (New) The method according to claim 32, wherein:

said spectral analysis is conducted using numerical Fourier transformation or FFT, Wavelet-transformation or Walsh-transformation.